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To encourage greater cooperation and communication between institutional researchers and college and university business officers, institutional researchers are provided with information necessary for understanding institutional budgets. The structure of the budget is presented in terms of six separate funds which comprise the budget--current, loan, endowment and other non-expendable, annuity, plant, and agency. Emphasis is placed on the current fund. The purposes of budget analysis, its historical background, and the two basic techniques used in budget analysis are also discussed. (HW)

AN INTRODUCTION TO BUDGETARY ANALYSIS

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The relationship between institutional research and institutional budgeting varies greatly from one campus to another. On some campuses these functions are closely interrelated--on others they are not. This usually is a reflection of the particular institutional problems or needs which led to the establishment of the institutional research office. In the long run, however, it is apparent that numerous interrelationships between institutional research offices and budgetary decision makers will develop.

The comments in this paper are designed for those who are not familiar with higher education budgeting. The intent is to provide institutional research people with enough information to enable them to understand what college and university business officers are talking about when they discuss budgets. Hopefully, this will encourage institutional research people to enter into discussions with budget people in their own institutions, leading toward greater cooperation and a greater exchange of information.

Budgets frequently have been described as programs expressed in terms of dollars. Although this is not a new definition of budgeting, it is becoming increasingly apt because of recent developments, particularly the advent of "program budgeting." Several things are implied by the definition of budgeting as program expressed in terms of dollars. One is that the budget is a comprehensive presentation of the institution's activities and

programs. For many institutions it is the only place where one can review the total activities of the institution in a single document. Another implication is that dollars become a common vocabulary for discussing dissimilar activities such as building maintenance, student services, and classroom teaching.

Budgetary decision-making usually is inter-related with programmatic decision-making because of the fact that money is necessary to implement most programs. Budgetary decision-making represents a series of "choices" among alternative possibilities. These choices reflect conscious or unconscious decisions about institutional priorities and balance. Insofar as institutional research can provide information and analysis which will improve decision-making, it will make an important contribution to the future well-being of the institution.

In some cases the institutional research office will be involved directly in budgetary analysis and cost studies, and in other cases financial studies will be made by the budget office. The latter situation probably is the most common. Even when the institutional research office is not directly involved in making financial studies, other types of studies made by the institutional research office will have direct or indirect relevance to budgetary decision-making simply because of the fact that budgetary decisions concern themselves with so many different aspects of the total operation of the institution. It is important, therefore, that institutional research people have an understanding of the institutional budget and of financial analysis techniques.

THE STRUCTURE OF THE BUDGET

The Principle of Separately Balanced "Funds"

A basic principle in college and university budgeting is that all of the money handled by the institution is not pooled into a single account from which money might be spent for any worthwhile institutional purpose. Instead the money handled by the institution is divided into a series of "funds," each of which has its own sources of income and purpose of expenditure. There are six separate funds at most institutions. These are described in Appendix A. They are:

1) Current Funds
2) Loan funds
3) Endowment and other non-expendable funds
4) Annuity funds
5) Plant funds
6) Agency funds

Restricted and Unrestricted Funds

Each of the six fund groups is divided into "restricted" and "unrestricted" funds. Restricted funds are those which have some limitation concerning the purposes for which they can be expended (a restriction beyond that implied by the nature of the fund group itself). Restricted funds usually come to the institution earmarked for a particular project or purpose by the donor or contracting agency. For example, unrestricted monies in the current funds could be spent for any purpose designated by the institution, but a donation earmarked by the donor for the support of an Economic Development Research Institute would be placed in a "restricted" current fund account.

The division of each of the six fund categories into restricted and unrestricted segments, results in twelve separate "pockets" into which monies may be placed (Figure 1). Each of these separate fund categories operates independently, that is, the income and expenditures of each must be in balance.

This is often a source of confusion to faculty members and others unfamiliar with the structure of a college budget. The fact that the institution may have money in the bank does not necessarily mean that these monies are freely available for any purpose. Much of the mystery of institutional budgeting disappears when one understands the fund structure.

Observers of institutional budgeting also should be aware that some monies come to the institution without any special designation or restriction, and the institution's chief financial officer, president, or board must then choose the fund category into which these monies will be placed. Most such monies are put into the current unrestricted fund and become available for immediate expenditure, but in some cases they may be placed into one of the other funds--to build up the endowment, or to provide funds for such purposes as construction or student loans. These represent legitimate institutional actions, but they represent the institution's choice rather than an externally enforced restriction.

FIGURE 1 - FUND GROUP

Unrestricted	Restricted
1. Current funds	Current funds
2. Loan funds	Loan funds
3. Endowment and other non-expendable funds	Endowment and other non-expendable funds
4. Annuity funds	Annuity funds
5. Plant funds	Plant funds
6. Agency funds	Agency funds

Current Fund Categories

We have already noted the potential confusion resulting from the existence of twelve "pockets" into which monies can be placed. This potential confusion is further compounded by the fact that the most important fund group--current funds--is subdivided into three major categories:

1) "educational and general"
2) "auxiliary enterprises"
3) "student aid"

And each of these is further subdivided as indicated below.

Educational and general monies are those which are currently available for instructional research, and public services programs and for general administrative expenses associated with the operation of the institution. These are the major expenditures of interest to most institutional personnel. Therefore, this is the category most frequently subjected to intensive analysis. Educational and general expenditures are subdivided into the following eight subcategories which are described in Appendix B:

1) General administration
2) General expense
3) Instruction and departmental research
4) Organized activities relating to educational departments
5) Organized research
6) Extension and public service
7) Libraries
8) Operation and maintenance of the physical plant

Student aid funds, as the name suggests, are those funds utilized for scholarships, fellowships and prizes.

Auxiliary enterprises are those institutionally operated activities which do not actually constitute a part of the educational program (such as dormitories, cafeterias, student unions, book stores, etc.). At most institutions these activities are self-supporting, and therefore it is important to separately account for their income and expenditures. Such a separate accounting provides information on whether they are genuinely self-supporting. A

separate accounting for auxiliary enterprises also keeps the picture clear concerning which monies are available for "educational" purposes and which are earmarked for other purposes.

In summary, the structure of the budget includes three major levels for categorizing expenditures--the six "funds" (each of which may have its restricted and unrestricted side); the separate categories within funds, the most important of which (for financial analysis) are the three categories within the current fund; and finally the sub-classifications within each category, the most important of which are the eight sub-classifications within the educational and general classification.

BUDGETARY ANALYSIS

Purposes of Budget Analysis

Budget analysis constitutes the link between raw financial data and the use of those data for interpretive and planning purposes. Budgetary analysis reveals the patterns in the institution's expenditures. The patterns themselves often tell a meaningful story. When the patterns are compared to other normative patterns, it is usually possible to make some interpretations and judgments concerning them.

Reports growing out of budgetary analyses may be used for a variety of purposes. One of the most common is external reporting--the presentation of information to an audience outside the institution itself. State legislatures and state agencies concerned with higher education planning and coordination often require such reports on institutional finance. Private institutions, although less often "required" to submit such reports, often choose to do so as a method of informing donors, past or prospective, about the institution's needs and its managerial efficiency. Budgetary analysis

also is used for internal purposes, especially when it can be tied in closely with institutional budgeting and long-range planning. In these cases budgetary analysis may constitute one of the bases for decision-making concerning the allocation of money among competing claimants.

In this presentation the term budgetary analysis is used fairly loosely. Lest this create confusion, it should be noted that there are important distinctions between budgetary analysis (or cost accounting), on the one hand, and budget "formulas" on the other. Budgetary analysis is done after the fact (whether it is after expenditures actually have been incurred or after a budget is developed) and therefore the analysis can be made in considerable detail. Formulas are developed prior to detailed budgeting and serve the purpose of providing estimates which are useful for the allocation of resources. Formulas can provide only an approximation of the resources needed by various parts of the total organization.

It should be noted also that there are important differences between studies in single institutions and inter-institutional studies. In the latter case the usual difficulties associated with making an analysis are further complicated by problems specifically related to the inter-institutional nature of the project. Among the most frequently encountered difficulties are problems associated with insuring comparability of information, respecting confidentiality to the degree desired by each of the institutions, and making comparisons among activities which are similar but not identical. Individual institutions can take advantage of the comparisons which are possible because of the increasing availability of public information about other institutions or groups of institutions. Such information provides norms against which an individual institution can compare itself. Studies of state systems provide one such source of readily available information.

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Historical Background of Budgetary Analysis

The history of budgetary analysis represents the interweaving of many forces and interests. These include the development of a uniform accounting system for American higher education; the development and initial popularization of cost analysis procedures by a group I shall refer to as the "Chicago school;" the pressures for adoption of budgetary analysis procedures which have emanated from state agencies since the early 1950's; and finally the contemporary emergence of the Planning-Programming-Budgeting System (PPBS) movement.

The development of a uniform accounting system for all institutions of higher learning does not sound like a very exciting piece of history, but it was the *sine qua non* for any interinstitutional financial comparisons. Without a common "vocabulary" and commonly accepted "rules of the game," it was impossible to compare one institution with another and it also was impossible to develop normative data against which individual institutions might measure their own performance. There were several early attempts by individuals to develop an accounting system which all colleges and universities would accept. This laid the groundwork for the appointment, in 1930, of a National Committee on Standard Reports for Institutions of Higher Education. That committee developed a classification procedure, published in 1935, which still provides the basic structure for college and university accounting systems. Two subsequent revisions of that report have been prepared, both by committees of college and university business officers. The first revision was published by the American Council on Education in 1952 as *College and University Business, Volume I*. A second revision is currently under way with the results scheduled for publication in 1968 by the American Council on Education.

Adoption of the uniform system by individual institutions proceeded slowly at first, but today it is used almost universally because of the fact that so many governmental reports must be based upon it. The major outlines of that accounting system were discussed earlier in this paper and are presented in somewhat more detail in Appendices A and B.

What I have chosen to call the "Chicago school" was a remarkable group of faculty members at the University of Chicago in the late 1920's and early 1930's who turned their attention to the study of higher education organization and administration. The group included Floyd Reeves, John Dale Russell, A. J. Brumbaugh, Lloyd Blauch, and others. A series of multi-institutional studies were conducted and published which for the first time provided normative information about institutional organization, administration, finance, curriculum, staffing, physical plant facilities, and many other matters. Although the works produced by this group are principally of historical interest today, they laid the groundwork for much that has happened during the 1950's and 1960's. Among other things, the system they developed for analyzing and comparing institutional patterns of income and expenditure was to reappear in the 1950's as the most widely used system of budgetary analysis. The work done by this group also provided the basis for a complete overhaul of the accrediting procedures used by the North Central Association (changes which ultimately were accepted by other accrediting associations).

Not all of the work initiated by the Chicago school has been replicated. One piece of work which is generally overlooked and which has particular significance to small institutions is the table developed by John Dale Russell and Floyd W. Reeves that provides a series of corrective "weightings" that can be used by institutions with less than 1,000 students to adjust calculations of expenditure per student so as to make their expenditures comparable

to norms established for larger institutions. It is commonly recognized that small institutions have certain inherent inefficiencies such as the necessity for providing a basic library, faculty, and physical facilities, plus certain unavoidable overhead costs. The small enrollment means that the cost of this basic program on a per student basis is higher than would be true if the enrollment were larger. Small institutions may know this to be true but often are at a loss to know how great the cost of this inefficiency is in terms of dollars and cents. The Russell-Reeves table quantifies this. It is reproduced here because it is not generally available in other sources (see Table 1). The dollar figures are badly out of date because of the fact that the table was published over 30 years ago, but there is reason to believe that the weightings are still reasonably accurate. The significant columns in the table are Column 1 which shows the enrollment groupings and Column 3 which indicates the weighting that should be used as a multiplier in reducing the actual cost per student before attempting to make comparisons with larger colleges. The table has a number of uses. In interinstitutional comparisons it provides an appropriate "handicap" for smaller institutions to make comparisons more reasonable. In estimating budgetary needs for a small college it provides a basis for estimating the amount of extra funding the institution will need on a per student basis because of its small size. It also provides food for thought for small institutions which are wondering about the economics involved in increasing their enrollments. Obviously a larger enrollment will require increased institutional support, but the amount needed <u>per</u> student to do an equivalent educational job will drop.

The years between 1935 and 1950 saw very little interest or activity in the area of institutional budgetary analysis. The Second World War intervened

TABLE 1

WEIGHTING FOR EXPENDITURE AND INCOME DATA TO ACCOUNT FOR SIZE OF ENROLMENT, AND MATHEMATICAL EVIDENCES OF THE PROGRESSION OF THE WEIGHTING CURVE

Enrolment Group (1)	Co-ordinate Reading (Dollars of Expenditure per Student, Quality Being Invariable (2)	Weighting (Co-ordinate Reading Divided by 205.00) (3)	Difference from Preceding Co-ordinate Reading (4)	Increment in Difference (5)
Over 1,050	205.00	1.0000	0.0	---
1,031-50	205.40	.9981	0.4	---
1,011-30	206.50	.9927	1.1	---
991-1,010	207.70	.9870	1.2	0.1
971-90	209.00	.9809	1.3	.1
951-70	210.40	.9743	1.4	.1
931-50	211.90	.9674	1.5	.1
911-30	213.50	.9602	1.6	.1
891-910	215.20	.9526	1.7	.1
871-90	217.00	.9447	1.8	.1
851-70	218.90	.9365	1.9	.1
831-50	220.90	.9280	2.0	.1
811-30	223.00	.9193	2.1	.1
791-810	225.20	.9103	2.2	.1
771-90	227.50	.9011	2.3	.1
751-70	229.90	.8917	2.4	.1
731-50	232.40	.8821	2.5	.1
711-30	235.00	.8723	2.6	.1
691-710	237.70	.8624	2.7	.1
671-90	240.60	.8520	2.9	.2

TABLE 1--Continued

Enrolment Group (1)	Co-ordinate Reading (Dollars of Expenditure per Student, Quality Being Invariable (2)	Weighting (Co-ordinate Reading Divided by 205.00) (3)	Difference from Preceding Co-ordinate Reading (4)	Increment in Difference (5)
651-70	243.70	.8412	3.1	.2
631-50	247.00	.8300	3.3	.2
611-30	250.50	.8184	3.5	.2
591-610	254.20	.8065	3.7	.2
571-90	258.20	.7940	4.0	.3
551-70	262.50	.7810	4.3	.3
531-50	267.10	.7675	4.6	.3
511-30	272.00	.7537	4.9	.3
491-510	277.30	.7393	5.3	.4
471-90	283.00	.7244	5.7	0.4
451-70	289.10	.7091	6.1	0.4
431-50	295.70	.6933	6.6	.5
411-30	302.80	.6770	7.1	.5
391-410	310.40	.6604	7.6	.5
371-90	318.60	.6434	8.2	.6
351-70	327.40	.6261	8.80	.6
331-50	336.90	.6085	9.50	.7
311-30	347.10	.5906	10.20	.7
296-310	358.10	.5725	---	---
286-95	363.95	.5633	5.85	---
276-85	370.00	.5541	6.05	.2
266-75	376.35	.5447	6.35	.3
256-65	383.00	.5352	6.65	.3
246-55	389.95	.5257	6.95	.3
236-45	397.30	.5160	7.35	.4

TABLE 1--Continued

Enrolment Group (1)	Co-ordinate Reading (Dollars of Expenditure per Student, Quality Being Invariable) (2)	Weighting (Co-ordinate Reading Divided by 205.00) (3)	Difference from Preceding Co-ordinate Reading (4)	Increment in Difference (5)
226-35	405.05	.5061	7.75	.4
216-25	413.20	.4961	8.15	.4
206-15	421.85	.4860	8.65	.5
196-205	431.10	.4755	9.25	.6
186-95	440.95	.4649	9.85	.6
176-85	451.50	.4540	10.55	.7
166-75	462.85	.4429	11.35	.8
156-65	475.10	.4315	12.25	0.9
146-55	488.35	.4198	13.25	1.0
136-45	502.70	.4078	14.35	1.1
126-35	518.25	.3956	15.55	1.2
116.25	535.30	.3830	17.05	1.5
106-15	554.25	.3699	18.95	1.9
96-105*	575.90	.3560	21.65	2.7
86-95	601.65	.3407	25.75	4.1
76-85	633.15	.3237	32.50	6.75
66-75	675.50	.3035	42.35	9.85
56-65	732.00	.2801	56.50	14.15
46-55	808.50	.2536	76.50	20.00
41-45	846.50	.2422	48.00	---
36-40	914.00	.2243	57.50	9.50

*The weightings for the institutions with less than 100 students are not as stable as the weightings for institutions of larger enrolment. Only a few institutions with small enrolment were available for the study, and the reference points were insufficient for determining accurately the behavior of the weighting curve in the lower brackets. The mathematical behavior of the curve in the lower extremity is, however, essentially the same as in other parts of the enrolment scale.

TABLE 1--Continued

Enrolment Group (1)	Co-ordinate Reading (Dollars of Expenditure per Student, Quality Being Invariable (2)	Weighting (Co-ordinate Reading Divided by 205.00) (3)	Difference from Preceding Co-ordinate Reading (4)	Increment in Difference (5)
31-35	983.00	.2085	69.00	11.50
26-30	1,066.00	.1923	83.00	14.00
21-25	1,168.00	.1755	102.00	19.00
16-20	1,296.00	.1582	128.00	26.00

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during this time, and the post-war veterans' enrollment boom consumed institutional energies. In the early 1950's the veteran enrollment began to be replaced by non-veterans, and Federal financial support under the GI Bill no longer provided a major source of support for students or institutions. The state governments found themselves faced with rapidly mounting higher education appropriations and became increasingly interested in securing more information about these appropriations--the purposes for which they were needed, the "efficiency" with which they were managed, and the possible effects of reducing requested appropriations. This interest grew stronger as enrollments in state-supported colleges and universities mounted more and more rapidly during the 1950's and 1960's. One result of this concern was the establishment in virtually every state of a state level higher education planning and coordinating agency. Another result was the adoption in many states of some form of statewide budgetary analysis. The procedures adopted tended to vary from one state to another.

One of the best procedures was developed by John Dale Russell for the New Mexico Board of Educational Finance in the early 1950's. The procedure drew heavily upon the work Russell himself had done as a member of the "Chicago school" in the early 1930's. A detailed description of this procedure was published in two different places, and the procedure has had wide influence. Russell and his associate, James I. Doi, prepared a series of 12 articles for College and University Business magazine describing this system. These articles appeared between September, 1955 and August, 1966. Subsequently Russell modified this material slightly for presentation at a conference, the proceedings of which were published in 1960 by the Western Interstate Commission for Higher Education under the title College Self-Study: Lectures on Institutional Research (Richard G. Axt and Hall T. Sprague, editors). Neither the College and University Business series nor the WICHE

publication are currently available from the publishers, but they can be located in many libraries or in the business offices on many college and university campuses.

Other states which have developed procedures for budgetary analysis or formulas for estimating future budgetary needs (which usually were based upon a rough analysis of cost patterns) include California, Indiana, Oklahoma, Texas, Kentucky, Colorado, Florida, Utah, and Virginia. In recent years a number of additional states have moved in the same direction.

The Ford Foundation through its Fund for the Advancement of Education provided the stimulus for a series of interinstitutional cost studies which not only provide useful normative information but also helped greatly in the development of cost analysis techniques. Among these studies were the two "60-college studies" (A Study of Income and Expenditures in Sixty Colleges--Year 1953-54, and A Second Look at the Sixty College Study: Comparison of Financial Operating Data for 1957-58 with a Study of Income and Expenditures in Sixty Colleges--Year 1953-54); the "California-Big Ten Study," (California and Western Conference Cost and Statistical Study: 1954-55); and Sidney G. Tickton's Needed: A Ten-Year College Budget, (New York, Fund for the Advancement of Education, 1961).

The two "60-college studies" provided normative information in great detail for small and medium-sized colleges. The California-Big Ten report did not report much detail but provided a good discussion, with supporting illustrative data, of a methodology for cost analysis in large, complex universities. Tickton's work dealt with the analysis of curriculum and expenditures in small or medium-sized colleges, as did the writing of Beardsley Ruml and Donald H. Morrison (Memo to a College Trustee), Earl J. McGrath (Memo to a College Faculty Member), and of Hungate, Meeth, and O'Connell

("The Quality and Cost of Liberal Arts College Programs: A Study of Twenty-Five Colleges," in Cooperative Long-Range Planning in Liberal Arts Colleges, edited by Earl J. McGrath).

The message in this growing literature on budgetary analysis, particularly as it interlocks with program analysis, is that institutions can make better decisions about their financial expenditures and can support better educational programs if they will expand and integrate their efforts at (1) long-range planning, (2) program analysis, and (3) budgetary analysis.

The recent emergence of PPBS (Planning-Programming-Budgeting Systems) and its application to higher education institutions is, in some respects, simply a further extension of the trends which have been noted above--trends toward increasingly sophisticated quantitative analysis and toward more complex interrelationships between program analysis and fiscal analysis. The concepts of PPBS first developed in the field of public administration, with particular applicability to large Federal agencies with complex administrative problems. The Department of Defense was the major testing ground for PPBS and the technique has been highly successful there. This has led to wide-spread interest in it and to proposals for its adoption throughout the Federal government and in state and local governments as well. There is the further suggestion that it be adopted in large universities where administrative problems are fully as complex as are those of many governmental agencies. Such a proposal was made in 1966 by Harry Williams in Planning for Effective Resource Allocation in Universities, published by the American Council on Education.

Long-range planning is at the heart of the PPBS proposals. Analytical information of many kinds is brought to bear during the planning process. The adoption of any form of PPBS will increase an institution's need for analytical studies of all kinds--a matter of no small interest to institutional research offices.

Techniques Used in Budget Analysis

Two basic techniques are utilized in most cost analysis procedures--percentage analysis and unit cost analysis. The first involves computing the percentage which is expended for various sub-categories. The second technique involves computing a unit cost that relates the dollars expended to services received. These are discussed in greater detail below.

"Percentage Analysis" Technique

The percentage analysis technique consists of computing the percentage of the total cost which is devoted to each of the sub-items. The object is to find and understand the patterns of expenditures and the reasons for variation in these patterns.

Two key generalizations about percentage analysis are: 1) the fact that there *is* a pattern which can be identified, and 2) the fact that there is wide variation among institutions in the patterns which they display.

Table 2, which is taken from the descriptions of institutional financial analysis by John Dale Russell and James I. Doi referred to earlier, shows a pattern for six institutions in which the *average* pattern involves almost 60% of expenditures going for instruction and approximately 17% for plant operation and maintenance, 16% for administration and general, 5% for libraries, and small percentages for extension and organized research. These are the normative data against which the six institutions individually can be compared.

It is important to note the wide variation among the six institutions, however. The percentage of expenditures which goes for instruction ranges from 48% to almost 62%. The percentage for plant operation and maintenance ranges from 15% to over 30%. The percentage for administration and general ranges from 14% to over 22%. These figures clearly indicate the two generalizations just made--there *is* a pattern (instruction consistently gets the

TABLE 2

Percentage Distribution of Total Educational and General Expenditures for Each Function for Each of Six State Institutions of Higher Education for 1954-55, and Average for All Six Institutions Combined for Five-Year Period, Including Budget for 1955-56

Institution	Full-Time Equivalent Enrollment	Adminis-tration & General	Instruction	Organized Research	Extension	Libraries	Plant Operation and Maintenance
"A"	3,727	14.6	61.0	1.6	2.4	5.5	14.9
"B"	1,702	14.6	61.8	0.2	0.0	5.3	18.1
"C"	925	14.0	60.1	---	0.3	4.9	20.7
"D"	464	21.8	50.4	---	3.0	5.1	19.7
"E"	967	22.2	54.4	---	2.7	5.7	15.0
"F"	174	15.9	48.4	---	---	4.3	31.4
Weighted average for 1954-55		15.9	59.0	0.8	1.7	5.3	17.3
Five-year average for all institutions combined		15.7	58.9	0.8	1.6	5.3	17.7

Reprinted from College and University Business, 1955-1956.

largest percent, for example), while at the same time there is tremendous variation from one institution to another.

What are the causes of this variation? The following factors stand out:

1. Institutional size and complexity. Small institutions have relatively high overhead costs for such things as administration and the upkeep of the physical plant, because these costs tend to be fixed. This reduces the percentages which can go for other things. As an institution grows larger these fixed expenditures represent a smaller proportion of the total. The percentage expended for administration and general declines and larger amounts are made available for other purposes. Institutions which are quite large and complex normally have high expenditures for organized research and for extension, which reduces the percentage spent for instruction. Therefore, other things being equal, instruction will receive the highest percentage of total expenditures in medium sized institutions which are large enough to be administratively efficient but not large enough to have developed major research and extension activities.

2. Geographic location. The costs of many things, such as utilities, labor, and police protection, vary in accordance with the geographic location of the institution. Heating costs, for example, will vary with climate and labor costs may differ markedly between urban and rural locations.

3. Adequacy of Resources. The adequacy of resources becomes an important factor in determining whether there is enough money to properly fund the instructional program as well as the many fixed

overhead costs which are unavoidable. An institution will first pay for those things which it <u>must</u> buy and will then put its money into other things which it values. In general, a poor institution (financially) will be forced to spend a disproportionately high proportion of its resources on administration and physical plant upkeep, whereas an institution with more adequate resources will be able to put a higher proportion of its funds into instruction and libraries.

4. <u>Type of institutional programs</u>. The percentage distribution of expenditures will be influenced to a significant degree by the type of program offered by the institution. The best example of this is found in land grant universities that have major agricultural extension programs. These programs of off-campus agricultural service consume a large enough proportion ot total institutional expenditures to make the percentage analysis show lower percentages for other activities. If the institution's percentage analysis is re-computed, omitting the extension expenditures, the pattern may approximate that of other institutions. The presence or absence of a demonstration school for teacher training purposes is another example of a major expenditure which influences the percentage shown for all other activities.

5. <u>Matters of institutional choice</u>. A certain degree of variation is attributable simply to choices made by the institution about such things as the level of administrative services, the relative emphasis placed upon campus beautification, or the relative emphasis placed upon library development. Some institutions choose to put all the money they possibly can into faculty salaries; other institutions choose to provide a "balance" among such things as faculty

salary levels, library adequacy, campus beautification, and administration.

To emphasize the point made earlier, there is wide variation in institutional expenditure patterns, but they are variations on a theme. One needs to understand both the basic pattern common to most institutions and the types of variations most frequently encountered.

Normative information. Analysis consists of finding the pattern in an institution's expenditures; normative information provides the basis for meaningful interpretation. Norms can be derived from a variety of sources. There is a growing body of literature which makes available normative information from various groups of institutions.

The best normative information for purposes of institutional decision-making is information about expenditure patterns over a series of years within the institution itself. Many of the difficulties encountered in comparisons with norms based upon other institutions (such as noncomparability of programs or accounting systems) are minimized when information is available for the same institution over a period of years. Unfortunately, cost studies usually are not initiated until the pressure to make use of them is fairly great. This frequently precludes waiting for the accumulation of information over a sustained period and forces institutions to analyze and use data from only a few past years instead. Until longitudinal records can provide for at least five consecutive years of information, their full usefulness is not achieved. Year to year changes generally are not dramatic. Even when they are, a genuine shift in the pattern of expenditures cannot be ascertained with certainty until several years have passed. Over a period of four or five years, however, trends can become quite clear.

Normative data drawn from other institutions--particularly other institutions of similar size and purpose--can be extremely valuable in providing

an additional dimension of interpretation. The normative information becomes markedly more useful if, in addition to the averages for certain types of institutions, the ranges of expenditures also are shown to indicate the extent of variation from the norm.

When an institution compares itself to such norms and finds that its expenditure pattern deviates from the norm, it can then analyze its own program to determine the likely reasons for the deviation. This provides a basis for deciding whether the deviation is one which the institution wants to continue. An institution may find, for example, that it is spending a higher proportion of its money for library than is the norm in similar institutions, but it may also be known that the library was neglected for many years, and that high expenditures simply reflect a rebuilding program. In this case, the institution presumably would want to continue rebuilding until its libraries became comparable with those in similar institutions. At that point the institution would be faced with a new decision: whether to continue to build the library in order to have one that was better than most, or whether to settle for an average library and invest the extra funds in some other activity.

The "best" pattern of expenditures usually is considered to be one in which a high percentage is spent in the "productive" functions such as instruction and libraries. The conventional wisdom says that expenditures for supporting activities such as administration should be relatively low in a well-managed institution. It should also be remembered, however, that there exists an optimum level of supporting expenditures, below which an imbalance is wasteful. An example of this is neglect on regular maintenance of the physical plant so that monies can be spent for other purposes. In many institutions deferred maintenance becomes a serious problem which

necessitates heavy expenditures or even replacement of buildings. Administrative expenses also can fall below an optimum level and result in damage to the institution through ineffective leadership and inefficient administration.

Unit Cost Technique

The second basic technique of budget analysis is computation of the cost for each unit of service rendered. Unit costs can be computed for the institution as a whole (cost for a full-time equivalent student) or they can be computed for functional categories of activity, such as instruction, administration, and libraries. Unit costs serve a different purpose from percentage analyses and the two forms of analysis taken together can be far more helpful than either technique alone.

The purpose of units costs is to facilitate comparisons of several types:

1. Comparisons between years.
2. Comparisons among institutions.
3. Comparisons among units within a single instituton or system of institutions.

A few examples will make these uses clear. One might compare for a series of years in a single institution the costs of chemistry instruction per credit hour taught to see whether unit costs are changing and if so, the nature of the change and the reasons for it. One might also compare these costs between two or more institutions as one way of testing the "justifiability" of the current cost (care must be taken to recognize differences in types of programs, including qualitative differences). And finally one might compare the costs of teaching chemistry with the costs of teaching other subjects, not only within a single institution, but within a number of institutions. This would show not only the fact that a difference exists

in the cost of teaching various subjects but also the extent of the difference, whether the difference is greater in one institution than in another, and if so, why.

Three crucial steps in determining unit costs are the following:

1. Selection of the Proper Cost Unit to Use. This can be more difficult than it might be assumed. The unit must be one which can be defined clearly and unambiguously, one for which cost figures can be identified and one which can be related to a clearly identifiable workload unit (see below). A comparison of costs for the operation and maintenance of the physical plant expenses in two institutions might sound plausible until one considers that the category actually is such a conglomerate classification that the causes of variations are not likely to be clear. A much more meaningful measure would be the unit cost of more precisely defined categories, such as the provision of police protection or the cost per square foot of custodial services.

2. The Selection of an Appropriate Work Unit to Use. Here again a good deal of care must be taken. The work unit selected must actually relate to the costs which are involved. For many types of activities a work load measure which involves students or student activity (such as student enrollment in particular classes) would be appropriate, but for others, such as maintenance or custodial services, another type, such as a square foot measurement related to the total area of buildings would be more appropriate. Certain library work loads are most appropriately measured in terms of numbers of books handled.

3. Establishing the Proper Relationship Between Steps 1 and 2. This is an extension of the selection of the proper work unit discussed above. Student credit hours may relate appropriately to a measurement of faculty work load or faculty productivity, but student credit hours do not bear a direct relationship to the workload of administrative offices or to the custodial services.

Unit costs are not susceptible to the same kinds of distortions which can influence percentage analyses. (For example, unit costs for on-campus liberal arts instruction are not affected by the presence or absence of a large agricultural extension program, but such a program inevitably influences a percentage analysis of institutional expenditures.) But unit costs are susceptible to other kinds of distortion. A simple example is found in the case of an instructional department which is teaching to full capacity and is in need of additional faculty. In the year just before the new faculty member is added, the work load will be unusually high (which is the justification for adding the new faculty member) and therefore, the unit cost for producing each student credit hour in the department will be unusually low. In the following year, when the salary of the additional faculty person is added to departmental costs, the unit cost for producing each student credit hour will jump. It would be easy to misinterpret this as a sign of sudden inefficiency. It is instead simply one of the expected fluctuations in unit costs over time. A perceptive cost analyst is aware of this type of fluctuation. He also develops a sensitiveness to the possibility that some costs may be too low rather than too high.

General Comments on Patterns of Expenditure

Certain categories of expenditure in the uniform classification of accounts are much better defined than others.

Instruction is fairly well defined except for the inclusion of "departmental research" which sometimes creates confusion, especially in large universities where research constitutes a matter of considerable interest and concern. Instruction typically constitutes about 50% of total educational and general expenditures. This percentage tends to be lower in small institutions because of the inherent inefficiency of small operations and also lower in large complex universities where public service, research, and extension activities constitute major program areas. The percent for instruction frequently is higher than 50% in medium-size institutions which concentrate heavily on instruction, with a minimum of competing activities. Salaries constitute 75% to 80% of the instructional category, and therefore any analysis of instruction becomes to a significant extent an analysis of faculty salaries.

Libraries are probably the most fully analyzed segment of the college and university program because of the emphasis librarians themselves place upon the analysis of this activity. Libraries typically take about 5% of the institution's total education and general budget. There is somewhat more stability in this percentage than in the percentages for some of the other functional activities. Of library expenditures approximately 60% goes for salaries. This often is surprising to people unfamiliar with library activities. It is easy to assume that the major expense of library operation would be the purchase of books. Actually the cost of making books accessible to users is greater--and this calls for personnel.

Other categories of expenditure are less well defined. The categories of general administration and general expense probably have caused the greatest amount of trouble. The names used for these categories imply that they represent the cost of administrative overhead in the institution. Rightly or wrongly, Americans tend to believe that administrative overhead

is analogous to waste and should be held to a minimum. In fact, however, major items of expense which do not constitute administrative overhead are inclucded in these categories and this has inflated the apparent administrative costs and caused institutions to be subjected to unwarranted criticisms. The category of general expense is the special culprit in this case. Only one of the three sub-categories within general expense, general institutional expenses, actually consists of administrative expenses proper. The sub-category of student services is generally recognized as an important service activity paralleling instructional services and quite unrelated to general administrative overhead. The separation of student services into an independent category would reduce confusion and seems advisable. The sub-category of staff benefits consists of items which in modern-day America constitute an expected form of salary (euphemistically called fringe benefits). It was an administrative convenience to lump these into a single budgetary item when institutions were small, but now that most institutions are large enough for staff benefits to constitute a substantial amount of money, it is desirable to allocate these expenses to departments and offices in the same way that salaries are allocated. Unless this is done, the true cost of the departmental operation is not shown, and inflated administrative cost appears to exist.

Organized activities related to instruction offer a number of problems in financial analysis because many of the activities are in part related to instructional activities (such as a farm which is used in connection with an agriculture program or intercollegiate atheletics which are used in preparing physical education majors for coaching) but are in part used in purposes (the farm also may provide milk for the dining hall and the intercollegiate athletics program provides entertainment and a public relations vehicle). In some cases these activities are incorrectly classified no

matter which category one chooses. Russell and Doi have suggested that this category should be removed from educational and general expenses altogether and should constitute a fourth category under the current fund (along with educational and general, student aid, and auxiliary enterprises).*

Operation and maintenance of physical plant is a conglomeration of varied activities which can be understood and analyzed only if they are broken down into their component sub-categories.

Organized research, and extension and public service are the two functional areas which vary the most from one institution to another. Large complex universities tend to have a great deal of one or both of these activities, whereas most colleges have little or none of either. Any comparison between an institution which does have these activities and another institution which does not have them must take this programmatic difference into account since it will influence the percentage distribution of expenditures for the total institution.

The Role of Institutional Research in Budgeting

Like many functions of an institutional research office, its responsibilities in the field of financial analysis and budgeting are shared with other university offices. Furthermore, the role played by the institutional research office in some respects is a secondary or supportive role. This supportive relationship is not unlike the institutional research role in connection with faculty studies (where operating responsibility lies with a department head or a dean) and admissions studies (where operating responsibility lies with a registrar or an office of admissions).

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*John Dale Russell and James I. Doi, "Analysis of Institutional Expenditures," College and University Business, October, 1955, p. 27.

Budgetary decision-making is the responsibility of the president, the chief academic officer, and the chief business officer, acting with the assistance of others within the institution. The budgetary role of the institutional research office lies in the collection and/or analysis of relevant information and the conduct of special studies which will assist in budgetary decision-making. Since the budget office also initiates studies of its own, a question can arise as to the appropriate division of responsibilities between the budget office and the institutional research office. In some institutions this could easily degenerate into a jurisdictional dispute. Such a dispute can be avoided if institutional research is conceived of as a "field" of activity in which many university offices may be engaged simultaneously. In an institution which is receptive to the use of research findings in decision-making, the number of needed studies will surpass the capabilities of any single office. Institutional research offices, therefore, have nothing to fear from the fact that operating offices are also conducting studies--they should welcome such studies and coordinate them with the work of the institutional research office itself so as to permit maximum utilization of the information developed.

APPENDIX A

Classification of Institutional "Funds"

1. Current funds. Current funds are those funds available for general operating purposes. Current fund expenditures, especially those from the current fund subcategory called "Educational and General," constitute the expenditures which are usually the principal subject for fiscal analysis and budgetary decision-making.

2. Loan funds. As the name implies, loan funds include monies which are loanable to student, faculty, and staff.

3. Endowment and other non-expendable funds. As the name implies, this includes the institution's endowment, plus other monies which for any reason are non-expendable at the current time. Earnings from endowments are expendable, of course, but must be transferred into one of the other funds before they are actually utilized.

4. Annuity funds. Annuity funds are those monies acquired by the institution subject to an annuity or living trust agreement. Upon completion of the annuity or living trust agreement, the remaining funds will become available to the institution for use according to the stipulation in the original agreement.

5. Plant funds. Plant funds are those monies intended for or actually expended for the acquisition of property or buildings for institutional use.

6. Agency funds. Agency funds are monies which do not belong to the institution, but are held in custody for groups such as campus organizations. At most institutions there are a large number of agency accounts, many of them small. The institution acts as "banker" for the campus-related organizations and agencies to whom these funds belong.

APPENDIX B

Classification of Educational and General Expenditures

1. General administration. This includes expenditures for the offices of administration such as the governing board, president, vice-president, business office.

2. General expense. This category is further sub-divided into three major sub-categories: (1) student services (offices and activities such as the registrar, student health service, guidance program); (2) staff benefits (group insurance, retirement contract premiums, social security, unless these are allocated to the departments and offices within the institution); and (3) general institutional expense (such offices and activities as the alumni office, publication of catalogs and bulletins, institution-wide convocations, institutional memberships).

   In large and medium size institutions the amount of money which falls in the general expense category can become quite large. Since the category really is a catch-all for a diversified group of expenditures, it often is difficult to explain why the institution's expenditures should be so large for a category which sounds so vague. A modification of the generally accepted classification of accounts to separate student services into a separately identified category appears desirable, as does the allocation of staff benefits to the offices and departments throughout the institution which directly benefit from the services of the individuals receiving these benefits.

3. Instruction and Departmental Research. This category constitutes the heart of the institution's instructional program. It is sub-divided into the separate instructional units (schools and colleges within a large university; or departments within colleges) and then further sub-divided to show a breakdown of expenditures within departments. In addition to faculty salaries, it includes expenses directly associated with the instructional programs, such as clerical assistance and supplies and equipment used in academic departments.

   "Departmental research" is a term which confuses people who are unfamiliar with collegiate budgeting. Departmental research is any academic research that is carried on by members of the teaching faculty without any separate funding for the research project itself. It frequently is asserted that a certain amount of scholarly or research activity is expected of most faculty members. The inclusion of departmental research in the instructional category constitutes a budgetary recognition of this expectation.

4. Organized activities relating to educational departments. This category is intended to include activities such as demonstration schools and farms that are operated by the institution as an adjunct to the educational program of the institution. In so far as these activities are operated for purposes not directly related to educational departments, they should be listed under auxiliary enterprises. Often the distinction is hard to make. A farm may be operated for several purposes--as a laboratory for agricultural instruction and also to provide food for the dining halls. Intercollegiate athletics may be operated in part as an adjunct to physical education instruction and in part as a self-supporting activity for the entertainment of students and the general public. When the total amounts of money involved are significant, as frequently is the case in intercollegiate athletics, the choice between classifying the activity as "related to instruction" or as an auxiliary enterprise can significantly affect the distribution of institutional funds among "educational" and other types of expenditures.

5. Organized research. Research units and projects which are separately organized and funded, such as agricultural experiment stations, engineering experiment stations, and separately funded research projects fall into this category.

6. Extension and public service. Separately organized and funded extension and public service activities appear here.

7. Libraries. In addition to the main library, any subsidiary libraries which are separately organized should be included in this category.

8. Operation and maintenance of the physical plant. Expenses associated with the operation of the building and grounds and their maintenance are included here. This includes utilities.